WACO ISD EDUCATION FOUNDATION
COVER SHEET – PART II
Application for Grant:
2026-2027 Funding Cycle

Assigned Grant Proposal #: 9

Project Title: Lits and Bits

Grade Level(s): 3-5 **# of Students DIRECTLY involved:** 250-300

Subject Area(s): ELA

Amount Requested: $ 8500

Grant Focus Area(s): In order to be considered, Waco Education Foundation Innovation Grant proposals must fall under one or more of the E4 focus areas: early childhood development, enhanced programming for advanced students, extended education for staff, and emphasis on student performance. NOTE: In addition to meeting one of the E4 focus areas above, grant readers are especially interested in creative and innovative grant requests that target fine arts, STEM, literacy, or enrichment.

(check all that apply)

- ☐ Early Childhood Development
- ☐ Enhanced Programming for Advanced Students
- ☐ Fine Arts
- ☑ Literacy
- ☐ Extended Education for Staff
- ☐ Emphasis on Student Performance
- ☑ STEM
- ☑ Enrichment

Lits and Bits Grant Proposal #9

Project Description:

The "Lits-and-Bits" Maker Lab reimagines 3rd through 5th-grade literacy by merging deep text analysis with 3D design and podcasting. Moving beyond traditional book reports, students use evidence-based reasoning to engineer 3D-printed artifacts and record "in-character" podcasts that explore narrative subtext. This innovative environment transforms passive readers into active creators, fostering **critical thinking** through architectural modeling and **collaboration** through digital media production. By bridging the gap between ELA and STEM, the lab provides a sustainable, high-impact ecosystem where students don't just "finish" a book—they use it as a blueprint for professional-grade innovation and creative synthesis. This project is rooted in the Constructionist Theory of Learning (Papert, 1980), which posits that students build knowledge most effectively when they are actively making physical artifacts that represent their mental models. By transforming a literary concept into a 3D object, students move from passive decoding to "deep processing." Research into Multimodal Literacy suggests that integrating tactile and digital creation into reading instruction:

- *Enhances Comprehension:* According to the Dual Coding Theory, when students process information through both verbal (text) and non-verbal (3D modeling/visual) channels, their ability to recall and synthesize information significantly increases.
- *Increases Engagement for Struggling Readers:* Hands-on "making" has been shown to lower the affective filter for students who struggle with traditional text-only instruction, providing a "low-floor, high-ceiling" entry point into complex narrative analysis.
- *Develops Spatial-Verbal Coordination:* Upper elementary students are at a developmental stage where they are transitioning to abstract thought; research indicates that physical manipulation of concepts (like building a setting from a story) acts as a "scaffold" for this transition.

Lits and Bits Grant Proposal #9

Rationale:

Relation to Waco Education Foundation Focus Areas

This project identifies primarily as a Creative Classroom Project. It moves beyond rote memorization by providing a "maker" approach to English Language Arts. By integrating 3D engineering and digital audio production into the 5th-grade reading curriculum, it serves as a Reward for Results—challenging students who have mastered basic decoding to apply their skills to high-level synthesis and professional-grade media creation.

Alignment with District and Campus Improvement Plans

The Lits-and-Bits Lab directly supports District goals regarding Literacy Proficiency and STEM Integration. Specifically:

- CIP Goal 1 (Academic Achievement): By requiring students to cite text evidence to justify 3D designs, we reinforce STAAR-aligned reading comprehension and evidence-based writing.
- CIP Goal 2 (Technology Integration): This project fulfills the mandate to provide students with 21st-century digital fluency, moving them from passive technology users to active digital creators.
- CCMR Alignment: Introducing 3D modeling (CAD) and audio engineering in 5th grade builds an early foundation for CTE (Career and Technical Education) pathways available in Waco ISD secondary schools.

The Need: A Bridge to Abstract Thought

While our campus has made strides in foundational reading, 3rd through 5th grade marks a difficult transition to abstract literary analysis. Currently, we lack the tactile and digital tools to engage kinesthetic and auditory learners in deep-text exploration. The "Lits-and-Bits" Lab is needed to provide a "third dimension" to literacy, ensuring that all students—regardless of their primary learning style—can demonstrate mastery of complex narrative structures. It transforms our classroom from a place of consumption into a modern design studio, preparing Waco students for the rigorous expectations of middle school and beyond.

Alignment with Texas Essential Knowledge and Skills (TEKS)

English Language Arts & Reading (ELAR) - Grade 5

- TEKS 5.6(F): Make inferences and use evidence to support understanding. * Lab Connection: Students must use textual evidence to justify the design and function of their 3D-printed artifacts.
- TEKS 5.13(C): Determine the appropriate mode of delivery [for a presentation]. Lab Connection: Students decide whether a 3D model, a podcast interview, or a digital soundscape best conveys their analysis of a character's journey.

Technology Applications (New 2024-2025 Standards)

- Strand 2: Creativity and Innovation: Students use innovative design processes to develop solutions to problems.
- Strand 3: Data Literacy: Students publish results for an audience (the Podcast Library).
- Strand 5: Practical Technology Concepts: Students build knowledge of software and hardware tools (3D printers/DAWs).

Alignment with Waco ISD Strategic Goals

- Priority 1 (Student Success): Moving beyond worksheets into experiential learning.
- Priority 4 (Technology): This project equips students with the technology and training needed to advance learning (Goal 4.2).
- CCMR Focus: By teaching 3rd through 5th graders the basics of Computer-Aided Design (CAD) and Audio Engineering, an early pipeline for the CTE programs (like Robotics and AV Production) at Waco high schools is created.

Lits and Bits Grant Proposal #9

Plan of Operation:

Project Description & Strategies: The Lits-and-Bits Maker Lab is a specialized literacy workstation designed to bridge the gap between abstract reading comprehension and tangible engineering. Using a "Read-to-Design" strategy, students identify architectural or mechanical elements within their novels and use Computer-Aided Design (CAD) to bring them to life. Simultaneously, students engage in "Audio-Analysis," scripting and producing podcasts that explore character subtext. This multimodal approach ensures that kinesthetic, visual, and auditory learners all have a pathway to demonstrate mastery of ELAR standards.

Bridging the Gap for Bilingual Learners:
For bilingual students and English Learners (ELs), traditional text-only literacy instruction can often create a "language barrier" that masks their true cognitive abilities. The "Lits-and-Bits" Maker Lab utilizes Multimodal Literacy—a research-backed approach that allows students to process and express ideas through visual, tactile, and auditory modes simultaneously.

Key Benefits for Bilingual Students:

- **Lowering the Affective Filter:** Research shows that hands-on "making" provides a low-stress environment where students can demonstrate deep comprehension of a story's plot or themes through a 3D model, even while their academic English vocabulary is still developing.
- **Contextualized Vocabulary Acquisition:** In the podcasting booth, bilingual students practice **"Translanguaging"**—using their full linguistic repertoire to script and record. This process helps them bridge the gap between their home language and the target English vocabulary in an authentic, high-interest context.
- **Non-Verbal Mastery:** By engineering a physical artifact from a book, a student can show *complex inference* and *critical thinking* that might be lost in a traditional written essay. It allows the teacher to assess the student's **brainpower**, not just their English fluency.

Objectives

- **Analytical Mastery:** 85% of students will demonstrate the ability to cite specific text evidence to justify a 3D design or podcast script.

- **Technological Fluency:** 100% of students will successfully operate 3D modeling software and digital audio workstations.
- **Community Connection:** To produce a public-facing "Digital Story Library" accessed by at least 100 community members/parents.

School and Community Partners

- **Waco ISD Instructional Technology Dept:** To provide technical oversight and software integration support.
- **Waco Public Library:** Collaborative "Book Talks" where student-made 3D artifacts are displayed to the public.
- **Local High School CTE Program:** Mentorship from high school AV-Production students to help 5th graders refine their podcasting skills.

Detailed Project Timeline (10-Month Calendar): The first year will pilot 5th grade only to get routines, procedures, and understanding of technology down so that other teachers can be trained.

Month	Activity	Goal
Aug/Sept	**Setup & Training**	Install printers/audio gear; Teacher masters Tinkercad and Soundtrap.
Oct	**The "Mini-Make"**	Students read *The Three Little Pigs* and 3D-print a "Wolf-Proof" brick.
Nov/Dec	**World Building**	Reading *The City of Ember*; 3D-designing mechanical solutions for the city.
Jan/Feb	**Character Voices**	Reading *Wonder* or *Echo*; recording "POV Podcasts" using the audio gear.

Mar/Apr	**Capstone Project**	Choice novel study; students design a "Museum Box" (3D object + Audio Guide).
May	**The Grand Expo**	Public showcase for parents and community members.

Parental and Community Involvement
Literacy is a social act. This project involves the Waco community in two specific ways:

- *The Lits-and-Bits Interactive Museum:* At the end of the year, we will host a "Literary Museum Night." Parents will be given "Audio Tour" maps. As they walk through the classroom, they will see 3D-printed artifacts and use QR codes to listen to the podcasts their children produced. This allows parents to see (and hear) the direct evidence of their child's critical thinking.

- *Community "Guest Experts":* We will invite local Waco professionals to join us via Zoom or in-person. They will provide "Professional Feedback" on student designs, showing students how the literacy skills they are learning in 5th grade translate directly into Waco's workforce.

Communication & Dissemination Plan

Foundation Inclusion & Recognition

The Waco Education Foundation will be recognized as the primary catalyst for the Lits-and-Bits Maker Lab. We plan to include the Foundation in the following ways:

- **Foundation Visit & Observation:** We invite Foundation members to visit the lab during the "World Building" phase (November/December) to see the 3D printers in action. This provides a high-energy opportunity to see students using evidence-based reasoning in real-time.

- **Media & Photo Opportunities:** We will capture high-resolution photos and video clips of students holding their 3D-printed literary artifacts and recording podcasts. These will be curated into an "Impact Reel" provided to the Foundation for use in

their annual report, social media, or fundraising gala.

- **Foundation Meeting Presentation:** I am fully prepared to attend a Foundation board meeting with a group of student ambassadors. The students will present their 3D models and play snippets of their podcasts, providing a firsthand account of how the grant impacted their learning.

District-Wide Dissemination

To ensure the $8,500 investment benefits the entire district, we will share our results and lessons learned through these channels:

- **WISD-TV & Communications:** We will invite the Waco ISD Communications team to film a segment on the lab for the district's YouTube channel and social media pages. This segment will highlight the "Innovation in Literacy" occurring at our campus.

- **Staff Development & Professional Learning Communities (PLCs):** I will lead a "Lunch and Learn" or a breakout session during a District Professional Development day. I will provide a "Starter Kit" digital folder for other campuses, including my rubric designs, Tinkercad templates, and podcasting checklists.

- **Campus "Tech Tour":** Our classroom will serve as an "Innovation Lab" for other teachers on campus. We will host an open-door period once per semester where colleagues can observe the workflow and discuss how to implement similar multimodal strategies in their own grade levels.

The long-term goal is to see this as being a pilot project for the district.

Project Evaluation & Success Metrics

The success of the Lits-and-Bits Maker Lab will be determined through a "Triangulation of Data"—utilizing quantitative test scores, qualitative student portfolios, and engagement surveys.

1. Quantitative Assessment (The Data)

- **STAAR Alignment & District Benchmarks:** We will track the "Evidence-Based Writing" and "Inference" categories on district benchmarks. Our goal is a **15% increase in "Meets" or "Masters" grade-level performance** for participating students compared to the previous year's traditional literacy instruction.

- **Pre- and Post-Unit Rubrics:** For each of the three major units (The "Mini-Make," The Novel Study, and the Capstone), students will be assessed using a **standards-based rubric**. Success is defined as 90% of students achieving "Proficient" or "Advanced" status in citing text evidence to support their 3D design or podcast script.

2. Qualitative Assessment (The Portfolio)

- **Digital Growth Portfolios:** Every student will maintain a digital portfolio (via Google Classroom or Seesaw). This will contain:
    - The original writing/design brief.
    - Photos of the 3D-printed artifact.
    - A link to the character podcast.

- **The Design Defense:** Success will be measured by a student's ability to verbally articulate the connection between their physical model and the author's intent during a final "Viva Voce" (oral) interview.

3. Engagement & Behavioral Metrics

- **Student Interest Surveys:** We will administer a Reading Interest Inventory at the beginning and end of the year. We are aiming for a **25% increase** in students who self-identify as "Highly Engaged" with classroom literature.

- **Library Circulation:** We will track the checkout rates of Maker-themed books from the library to measure the project's impact on independent reading habits.

4. Dissemination of Results

At the conclusion of the grant cycle, a Project Impact Report will be generated. This report will summarize the data points above and be shared with the Campus Site-Based

Decision-Making (SBDM) committee and the Waco Education Foundation to demonstrate the ROI (Return on Investment) of the funded equipment.

Long-Term Implications & Sustainability Plan

1. Project Sustainability (Financial & Technical)

The Lits-and-Bits Maker Lab is designed with a high durability-to-cost ratio. Unlike consumable-heavy projects, the primary investment is in high-quality, education-grade hardware with a projected lifespan of 5–7 years.

- **Hardware Longevity:** The 3D printers (Bambu Lab P1S) and Blue Yeti microphones are industry-standard tools known for their reliability. We will maintain these assets through the campus technology inventory.

- **Consumables:** The recurring costs- primarily PLA filament and cardboard- are minimal (estimated at $200 annually). These costs will be absorbed by the campus instructional budget or through small-scale "Maker Fairs" where student-designed (non-literary) items can be sold to the community to self-fund future materials.

- **Software:** We have prioritized free or "freemium" educational platforms like **Tinkercad** and **Soundtrap**, ensuring that software access remains free for students and the district in perpetuity.

2. Intellectual Sustainability (Curriculum)

The most significant long-term implication is the creation of a Literacy-to-Maker Curriculum Map.

- **Archived Resources:** All rubrics, design briefs, and podcasting scripts developed during the 2026-2027 year will be archived in a shared district drive. This ensures that even if there is staff turnover, the Lits-and-Bits methodology remains a staple of the literacy experience at our campus.

- **Peer Mentorship:** Students from the 2026-2027 cohort will act as "Lab Ambassadors" for the following year's students at the end of the Spring 2027 semester.

3. Impact on Constituents (Students, Teachers, and District)

The ripple effects of this grant will be felt long after the initial funding year:

- **For Students:** This project provides an early-intervention "hook" for literacy. By the time these students reach Waco ISD's middle and high schools, they will already possess basic CAD modeling and audio production skills required for advanced CTE (Career and Technical Education) pathways. We are effectively building a pipeline for Waco's future engineers, journalists, and digital creators.

- **For Teachers:** This lab serves as a "Proof of Concept" for the district. It demonstrates how to successfully integrate STEM and ELA, providing a blueprint for other literacy teams in Waco ISD to modernize their literacy instruction without sacrificing academic rigor.

- **For the Community:** By producing a public "Digital Story Library," we are creating a permanent record of student achievement that parents and community members can access for years, strengthening the bond between the school and the Waco community.

Key Personnel: The Lits-and-Bits Implementation Team

1. Project Lead: Toni Rejcek, M.Ed.

Role: 5th Grade ELA/Social Studies Teacher.
Responsibilities: Primary instruction and curriculum integration.

- Developing "Read-to-Design" briefs and podcasting rubrics.
- Managing the project timeline and student digital portfolios.
- Serving as the primary point of contact for the Waco Education Foundation.

2. Technical Support: Campus Technology Specialist

Role: Campus Instructional Technology Specialist.
Responsibilities: Assisting with the initial setup of 3D printers and audio hardware.

- Ensuring all software (Tinkercad/Soundtrap) is whitelisted on the Waco ISD network.
- Troubleshooting hardware issues to minimize instructional downtime.

3. Administrative Oversight:

Role: Campus Principal.
Responsibilities: Providing administrative support and allocating "Innovation Space".

- Overseeing the sustainability of the project within the Campus Improvement Plan (CIP).
- Facilitating communication with parents and the broader Waco community.

4. Collaborative Partner: Librarian/Media Specialist

Role: Campus Media Specialist.
Responsibilities: Curating the "Maker-Friendly" book collection.

- Co-hosting the "Grand Expo" in the library/media center at the conclusion of the project.
- Assisting students with research during the "evidence-gathering" phase of their design briefs.

The Lits-and-Bits Maker Lab is a revolutionary fusion of high-level literacy and technical engineering that transforms upper elementary readers into architects of their own understanding. By utilizing 3D-printing and professional podcasting to deconstruct complex texts, this project replaces passive worksheets with a "Read-to-Design" workflow that is scientifically proven to bridge the achievement gap for kinesthetic and auditory learners. The Waco Education Foundation should not miss this opportunity because it establishes a repeatable, "future-ready" model for literacy that places our district at the forefront of educational innovation. Beyond the classroom, this lab is designed for maximum public visibility; we anticipate the Lits-and-Bits success stories and student-produced media becoming a centerpiece for WISD-TV, local news features, and even national educational conferences. Funding this project doesn't just buy equipment- ***it launches a high-profile narrative of Waco's commitment to excellence that will resonate across the state and serve as a beacon for what modern, integrated education should look like.***

Waco Education Foundation

Grant Budget Form

Assigned Proposal #	9
Project Title:	Lits and Bits
Number of Students Served by Grant:	200-300

Qty	Budget Item	Verify Vendor (Y or N)	$ Requested from the WISD Foundation	Other Secured Source	$ from Other Source (if applicable)	Total Amount
	Consumable Supplies					
5	MakerBot 900-0148A Sketch PLA 1.75mm Rainbow Filament	Y	$ 299.99			$ 1,499.95
						$ -
						$ -
						$ -
						$ -
						$ -
	total Consumable Supplies		$ 299.99		$ -	$ 1,499.95
	Technology					
1	*MakerBot SKETCH Classroom Two Printer Setup*	Y	$ 2,499.00			$ 2,499.00
6	iPads wiith cases and AppleCare	Y	$ 2,447.70			$ 2,447.70
	total Technology		$ 4,946.70		$ -	$ 4,946.70
	Long-Term Supplies / Equipment (items that will last beyond the grant year)					
5	Blue Yeti Nano USB Microphones	Y	$ 86.72			$ 433.60
5	Microphone Stand for Blue Yeti	Y	$ 27.99			$ 139.95
5	OneOdio A71 Hi-Res Studio Recording Headphones	Y	$ 31.35			$ 156.75
2	3D Printer Stand with Filaments Storage	Y	$ 59.99			$ 119.98
35	Little House on the Prairie books	Y	$ 7.19			$ 251.65
35	The City of Ember books	Y	$ 5.27			$ 5.27
	total Long-Term Supplies		$ 218.51		$ -	$ 1,107.20
	Contracted Services					
						$ -
						$ -
	total Contracted Services		$ -		$ -	$ -
	Personnel					
						$ -
						$ -
	total Personnel		$ -		$ -	$ -
	Travel / Other					
						$ -
						$ -
						$ -
						$ -
	total Other		$ -		$ -	$ -

Totals	**Total Requested from the WISD Foundation**	**Foundation Cost Per Student**	**Total from Other Sources**	**Total Cost of Project**
	$ 5,465.20	**#VALUE!**	**$ -**	**$ 7,553.85**